SUMMARY

Prepared by Danny Wong
On Tuesday, August 16, 2005

Stationary Combustion Sources Workgroup Meeting

Held August 9, 2005
401 E. State St., Trenton
Public Hearing Room
Meeting called by: Yogesh Doshi
Facilitator: Danny Wong

Attendees: Yogesh Doshi, NJDEP BPP; Rudy Maes, ESMI of NJ; James Connolly, Hoffman-LaRoche, Inc; Luis A. Comas, Sunoco; Fran Lindsley-Matthews, Chevron; Keith Ocheski, EnviroMet; Kelly Moretta, Schering Plough Corp; Scott M. Conklin, Ocean Cty Utilities Authority; Arlene Borowsky, ENSR Int'l; Jon Perry, PSEG; Christine Neely, PSEG; Rich Bankowski, Rutgers University; Gary Helm, Conectiv Energy; Ted Gardella, USEPA; Milt Grundlock, Gloucester Cty Utility; Joe Carpenter, NJDEP DSRT; Melissa Evanego, NJDEP BAQP; Danny Wong, NJDEP BAQP; Matt Zehr, NJDEP SRO; Serpil Guran, NJDEP DSRT; Karen Nowicki, AEANJ; John Hoertz, USAF; Christine Heath, Trinity Consultants; Howard Ellis, Enviroplan; Mark Caine, Bristol-Myers Squibb Co.
Speaker Phone Participants: Tom McNevin, NJDEP BAQP; Kyle Boudreaux, Florida Power & Light
Materials: Copies of day's agenda, PowerPoint Presentation(s) – Biodiesel, Total NJ EGU NOx Emissions on Actual 8/14/02, Further Breakdown of Inventory, NOx Reduction Project, NOx Reduction Technologies

Introduction/Announcements

All attendees introduced themselves and stated their affiliation i.e., NJDEP, electric generators, non-electric generators, consultants, and other government agencies for the benefit of the new members; prefaced the inventory presentations by explaining the data is in draft form and has yet to be approved by EPA; the group as a whole voiced no objections to listing names and/or affiliations on the Air Workgroup website; report format is undecided.

Overview

Reviewed minutes from last meeting, reviewed day's agenda; presented inventory data, EGU control information (by industry), biodiesel; Breakout Groups to further discuss EGU, biodiesel, and fuel switching; talked about logistics (next meeting, time, location).

Discussion

Topic 1: Peaking Turbine Control Measures
Discussion: PowerPoint presentation by John Perry

- Types of EGU's – baseload, load-following, and peaking
- Load curves
- Congestion management
- List of PSE&G's peaking turbines and capacity factors
- Retired units
- PSE&G's emission trend
- Control options – SCR, DLNC, LOE, SCONOx, XONON, Water Injection, Repowering/Replacement

Other: suggestions of other areas for investigation and what other states have implemented

Conclusion: some of the control options may not be economically feasible; federal/state regs need to allow the use of newer, cleaner units in place of the older, dirtier units
Action Items/Person(s) responsible/Deadline: Not applicable

Topic 2: Water Injection
Discussion: PowerPoint presentation by Gary Helm
- Project history & objectives
- Principles of operation
- Major equipment/components
- Engineering challenges
- NOx emissions reductions
- Cost estimates

Conclusion: Most cost effective for getting NOx reduction for the listed units
Action Items/Person(s) responsible/Deadline: Not applicable

Topic 3: Further Breakdown of Inventory
Discussion: PowerPoint presentation by Melissa Evanego
- Refinement of inventory data presented from the 7/12/05 meeting
- SO2 and NOx pie chart of point sources

Conclusion: Possible control measures drawn from this data – fuel switching, lowering S% in fuel, refinery gas control.
Action Items/Person(s) responsible/Deadline: Not applicable

Topic 4: Fuel Switching
Discussion: PowerPoint presentation by James Connolly
- Scope of main energy operations
- Energy center operation
- 5 Year boiler energy profile – average 77% natural gas, 23% oil
- #6 Fuel oil use vs. allowable (use of 1.1 million gallons, permitted to burn 4.2 million gallons)
- #6 oil primarily used when temperature drop below 20°F
- Emissions reduction
- Cost to switch based on real data

Conclusion: Cost to switch is too much for this facility
Action Items/Person(s) responsible/Deadline: Not applicable

Topic 5: Controls Implemented in Other States
Discussion: Short discussion led by Yogesh Doshi
Conclusion: There are many efforts in developing control measures in California and regional organizations (NESCAUM, OTC, MARAMA, etc.)
Action Items/Person(s) responsible/Deadline: Not applicable

Topic 6: Controls Implemented in Other States
Discussion: Graphs by Tom McNevin, presented by Danny Wong
- Updated data for NOx emissions from EGU's on 8/14/02
- Data accounted for recent and future unit retirements, regulatory actions, enforcement actions, etc.

Conclusion: High emitting peaking units will still constitute ~50% of NOx emissions during the ozone season
Action Items/Person(s) responsible/Deadline: Not applicable

Topic 7: Biodiesel
Discussion: PowerPoint presentation by Serpil Guran
- Overview of fine particulate matter
- What is biodiesel
- B100, B5, B20
- Basic production technology
- Properties & attributes
- Benefits of biodiesel – reduced emissions, decrease dependence on oil, new agricultural market, lubricity when added to oil
- Could biodiesel be a fuel source for stationary internal combustion engines?
- Test cases & studies
- Rowan University – 3 school buses
- Iowa – 1972 Cooper and 1999 Caterpillar
- Brookhaven National Laboratory
- Storage studies – Europe

Conclusion: Biodiesel is a viable fuel source in reducing emissions
Action Items/Person(s) responsible/Deadline: Not applicable

Topic 8: Breakout Groups

Discussion: Summary reports by the three groups

- EGU's
  - Pratt and Whitney FT4 - Aeroderivatives
    - There are about 35 such simple cycle turbines in NJ, which are not equipped with any kind of NOx control such as water injection. Water injection is technically feasible NOx control technology on this type of turbines. There are over 40 such turbines in NJ, which are equipped with water injection.
    - PROS: Water Injection has the potential to reduce about 40% NOx emissions; Each engine roughly operates about 12 hours per day during hot summer days; Based on existing actual emission data, each engine can reduce about 0.5 tons of NOx per day; Overall, this technology has the promise of reducing 35 tons of NOx per ozone day.
    - CONS: Equivalent amount of higher CO emissions; annualized cost of about $44,000 per ton of NOx reduction (Presentation by Conectiv)
  - LM6000 - Aeroderivatives & GE - 7EA - Large Industrial Frame type turbines
    - There are about 4 GE 7EA simple cycle turbines in NJ. Similar simple cycle turbines in CA are equipped with SCR. The use of SCR is possible due to addition of dilution air to bring the exhaust temperature within catalyst operating range.
    - PROS: SCR has the potential to reduce 75 – 80% NOx emission; Each engine has the potential to reduce about 0.25 tons of NOx per day; Overall it can reduce up to 1 ton of NOx per day
    - CONS: Exorbitantly high cost to install SCR for very small reduction; Higher CO emissions; Lower efficiency and hence higher greenhouse gas emissions
  - Large Commercial Boilers:
    - Workgroup expressed concern that there may be industrial and commercial size boilers greater than 100 MMBTU per hour, which may not be equipped with Low-NOx burners.
    - The Department indicated that NOx RACT rule requires LNB on all such boilers.
  - Other Issues/concerns:
    - The Department should restrict fuel oil use during ozone days (hot summer days), provide additional flexibility (calendar year v/s 365 days rolling) for relatively cleaner units, mandatorily restrict the use of air conditioning by setting higher temperature during hot summer/ozone days (this should be done for large office and industrial buildings), promote tax incentives or financial incentives to cover the cost of new technology
    - Overall consideration should also be given to balance the need of energy and environment.
- Biodiesel
  - Potential viable fuel source
  - Widely used in Europe
  - Emissions reduction – PM2.5, CO, HC, PAH
  - Need emission factors
  - Need more NJ research on ULSD+B20 and test cases
- Fuel Switching
  - #6 oil to # 2 oil
    - Cost of switching includes retrofit and clean up
    - Supply of #2 (not enough) and #6 (excess)
    - Retrofit may trigger NSR, SOTA, etc.
    - Less emissions (NOx, SO2, CO2, etc.) which also means less emissions fees
    - Lower maintenance cost, including no tank heaters, less boiler foul up, etc.
  - set entire state of NJ to 0.3% sulfur for #6 oil
  - set entire state of NJ to 0.05% sulfur for #2 oil
  - what other states' sulfur % is
  - incentives for switching
  - need more education/assistance for smaller facilities
  - fuel price dictates type of fuel used
  - allow the use of newer, cleaner units in place of the older, dirtier units

  Others: More refinement of inventory

Conclusion: Need to weigh pros & cons, implementation issues, cost, and amount of reduction

Action Items/Person(s) responsible/Deadline: Not applicable

Topic 9: Logistics
Discussion: Set up next meeting (September 13); time; place
Conclusion: Next meeting to be held on September 13. Meeting to take place in Trenton at 401 E. State St., Trenton, in the Public Hearing Room, from 9am to 12pm.
Action Items/Person(s) responsible/Deadline: Yogesh Doshi shall set up the September 13 meeting.

Wrap-up: Task for next meeting (draft report), white papers, parking lot issues